The Augmentorium: a sanitation technique for controlling Tephritid Fruit Flies in Reunion Island

J.-P. Deguine[1], M. Duval[2], S. Quilici[1], M.-L. Moutoussamy[1], C. Ajaguin-Soleyen[1], P. Laurent[2]

[1] CIRAD, UMR 53 PVBMT, 7 chemin de l'Irat 97410 Saint Pierre, La Réunion, France

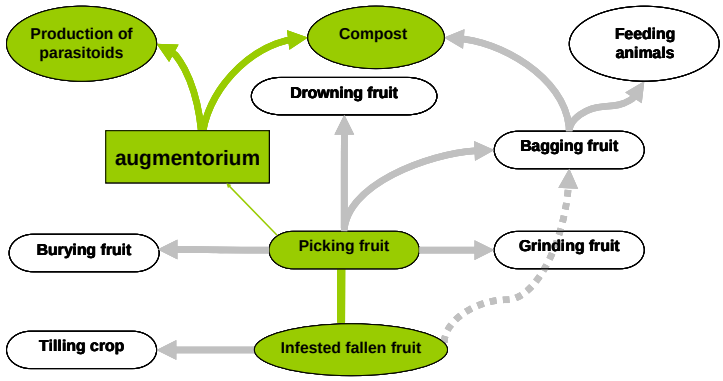
[2] IUT Génie Biologique, 40 avenue de Soweto BP 373, 97455 Saint-Pierre Cedex, La Réunion, France

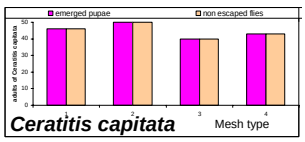
CONTEXT

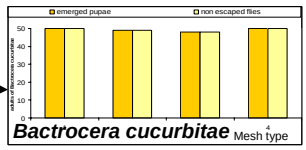
- In Reunion Island, Tephritid fruit flies are the main pests of horticultural crops, causing severe yield losses to Cucurbitaceae and Solanaceae.
- As in other contexts, chemical protection does not give satisfactory results and moreover induces major harmful secondary effects in terms of environmental and human health.
- Today the critical issue is to move from this curative and agrochemical protection towards a preventive and agroecological one. The latter relies on an ecologically balanced and sustainable functioning of agroecosystems.
- It is based on various techniques, such as: monitoring, sanitation, use of borders plants and push-pull system, male annihilation technique, etc.

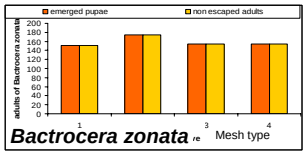
OBJECTIVES

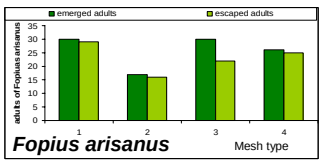
- This study is focused on an original technique of sanitation to help controlling Tephritid fruit flies in Reunion Island using a tent-like structure called augmentorium.
- It aims to sequester the adult flies emerging from infested fruit while allowing the escape of parasitoids. In addition, it is possible to produce compost in the augmentorium in a sustainable reasoning of agroecosystem management.
- This technique has already been implemented in Hawaii (Klungness *et al*., 2005).

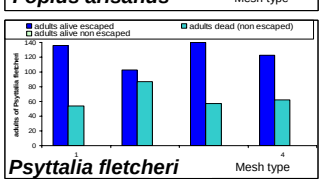












MAIN RESULTS

- A local prototype (*augmentorium péi*) has been built.
- Its efficacy proved to be good in the lab and four tested mesh types showed 100 % sequestration of adult flies (*Ceratitis capitata*, *Bactrocera cucurbitae*, *Bactrocera zonata*) and suitable rates of escape of parasitoids (*Fopius arisanus*, *Psyttalia fletcheri*).
- Moreover, both organic and conventional farmers who were shown the augmentorium were enthusiastic to test it in their fields and proposed some improvements of the prototype.

CONCLUSION

- To be effective, this technique should be used on a large scale both in terms of time (several months or years) and space (farm, landscape) with the farmers collaborating to use this sanitation technique across significant production areas.
- As a component of agroecological protection against fruit flies, it may play central role in terms of Conservation Biological Control.

Klungness L.M., Jang E.B., Ronald F.L., Vargas R.I., Sugano J.S., Fujitani E., 2005. New sanitation techniques for controlling Tephritid Fruit Flies (Diptera: Tephritidae) in Hawaii. J. Appl.Sci. Environ. Mgt, 9: 2, 5-14.